

AGRICULTURE IN THE ARCTIC CHALLENGES NORWAY'S FARMERS

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Foreign Agriculture, December 21, 1970

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Agriculture in the Arctic Circle

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Agriculture in Norway's far north—near or above the Arctic Circle—is distinctive for both its problems and for measures taken to solve them.

Some of the problems are the short growing season, low summer temperatures (which slow up plant growth), remoteness from markets and sources of supplies, and the relative infertility of the soil. In an area in which agriculture is one of the chief occupations, only a small portion of the total food needs of a population of about one-half million is met by local production. Arctic Norway supplies its own food needs only in fresh milk and potatoes.

Most of the steps taken to help Norway's Arctic farmers have been initiated by the Norwegian Government. Heavy subsidies for dairy production, an arrangement that in effect pays costs of transporting farm inputs to the far north, and assumption of most of the costs of putting new land into agricultural production are some of the more major innovations.

Traditionally, Norway's Arctic farmers have helped themselves. Commonly, they have combined small-scale farming with fishing operations for extra income. While the combination of fishing and farming has been satisfactory for some, it has also kept others from exploiting the full potential of either.

Farming methods in these Arctic areas are lagging, and most of the 26,000 farms are too small to provide an adequate livelihood. They average between 5 and 12 acres, and only 29 percent have more area than about 18.5 acres. In addition, Arctic farmers have many problems of environment.

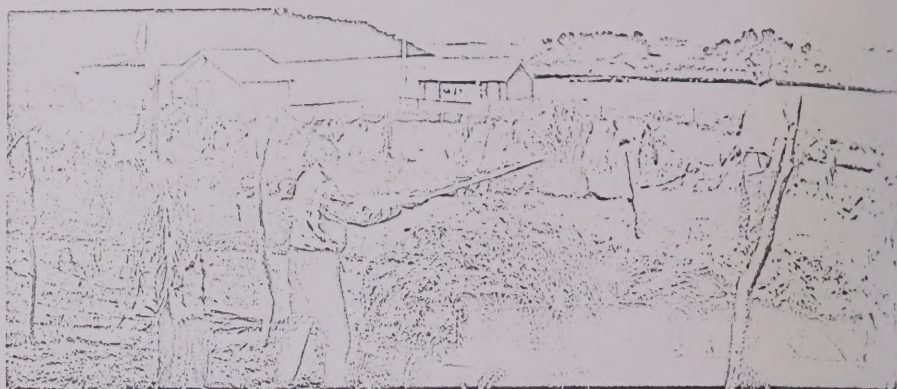
The only level land in the 43,652 square miles of the three northern counties of Norway—Nordland, Troms, and Finnmark—lies in narrow strips along the coast, and these lowlands are not continuous. Even the coastal lands have numerous outcroppings of rock, and the soil is peppered with stones. Both make cultivation difficult. Because of the discontinuity of lowlands, farms are isolated and transportation between them and to markets is chiefly by boat and ship. For the area as a whole, less than 1 percent of land is cultivated; in Finnmark only 0.2 percent is tilled.

The climate is less than ideal for

agriculture. Coastal areas are warmed by the Gulf Stream but also tend to receive excessive rain during the short growing season. At the same time interior regions—pastures for sheep and reindeer—get little rainfall. Because of the far northern latitude, the growing season is short—ranging from about 170 days in the very southern part

not seeded for pasture or hay crops because they do not usually survive Arctic winters.

Even for growing grass heavy applications of fertilizer—particularly nitrogenous substances—are needed. Because of the cool climate very little of the organic fixed nitrogen present in the soil is released by soil bacteria for



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of the area (south Nordland) to about 90 days in the north (Finnmark). The many hours of daylight per day that encourage plant growth are more than counterbalanced by low temperatures. The average temperature of the warmest month in Finnmark, for example, is only 50° F.

Because of the climate and topography, the types of crops than can be grown and livestock that can be raised are limited. Some cereals—chiefly feed barley—are grown in southern Nordland; but north from the town of Bodø potatoes and grass are the main cultivated crops. A few vegetables, such as carrots and cabbage, are grown in small quantities. Glasshouse production of vegetables is up but still minor.

By far the most important crop is grass, which is grown for use by livestock on 90 percent of the cultivated area. Native grasses do comparatively well in the Arctic climate but are gradually being replaced by specially bred varieties of Timothy, which outyield natural meadow by about 40 percent. Clover and other leguminous plants are

plant use. Most of Norway's Arctic farmers use fertilizers in amounts recommended for optimum yields.

Dairying is the predominate livestock operation, and for most farmers sales of fluid milk for local consumption is a main source of income. Arctic Norway at present contains about 100,500 cattle—or 10 percent of the country's cattle population. Recently, however, cattle numbers have been declining, and there is little surplus milk available for butter and cheese production—another possible source of income to northern farmers.

Approximately 331,500 head of sheep—or 18 percent of Norway's total—live in the Arctic. They are concentrated on inland mountain pastures during the summer and commonly spend the winter out-of-doors near the coast, where they can be hay fed. Sheep seem to have good potential in northern Norway and the Government is encouraging sheep raising.

About 120,000 reindeer pasture in Finnmark—the northernmost subdivision of Norway—under the care of

an estimated 300 Lapp families. Animals are moved to coastal areas where the grass supply is plentiful for the summer but are taken inland to mountain plateau pastures for the winter. The heavy snowfall in winter along the coasts prevents reindeer from finding sufficient grazing; but the sparse snowfall inland is not an impediment

present is the higher prices fixed for milk delivered in Nordland, Troms, and Finnmark. Nordland and Troms milk gets an extra subsidy of \$0.15 per gallon and Finnmark milk \$0.24 per gallon in addition to the normal support price. Farm butter produced in Nordland and Troms brings \$0.16 extra per pound and Finnmark butter \$0.25

extra. But consumers in northern Norway pay the same prices for dairy products as customers in the south.

Another form of dairy aid is that freight subsidies are given for moving milk between dairy plants—that is, for transport from surplus to deficit areas.

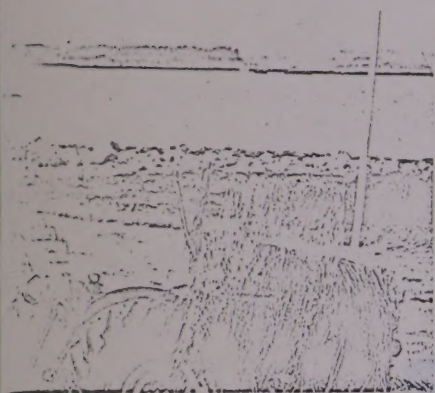
A policy that considerably benefits northern livestock raisers is maintained by the Norwegian Grain Corporation. All feeds and feedgrains are sold at the same price throughout Norway. Since there are no feed processing plants in northern Norway—and no material to process in most of the area—complete feeds are shipped from the south with the Grain Corporation paying the extra transportation costs.

Another indirect aid to livestock production is the Government's subsidy on fertilizer use—substantial in the north—without which farmers could not grow enough grass for their cows.

The Government's most unusual aid to livestock raisers in the Arctic is supervision of the annual reindeer slaughter and inspection of reindeer meat. Each year around September (after temperatures drop near or below freezing) mobile slaughtering rings are set up in the open and reindeer are butchered by the local population. The surplus meat is sold not only in Norway through farmer-owned cooperatives but is also sold on foreign markets.

Getting more land under cultivation in the Arctic has high priority with the Government. Aid for developing new farmland is given generously; of the estimated cost of bringing new land under cultivation—\$560 per acre—the Government will pay 80 percent. But there is little evidence the program has had much impact. While the costs of development are high, returns from new cultivated lands are relatively low. The extent of cultivated area has actually decreased in the past 10 years. As new farms are brought into production, old ones are abandoned or permitted to return to permanent pasture.

The future of farming in Arctic Norway remains uncertain. The trends of the last 10 years in decrease of numbers of farms but increase in farm size will probably continue and may increase the profitability of operations. Probably, however, the area will do well just to hold its own in farm output and returns on its agriculture. Hence it is unlikely that Arctic Norway will become more self-sufficient in supplying its food needs.

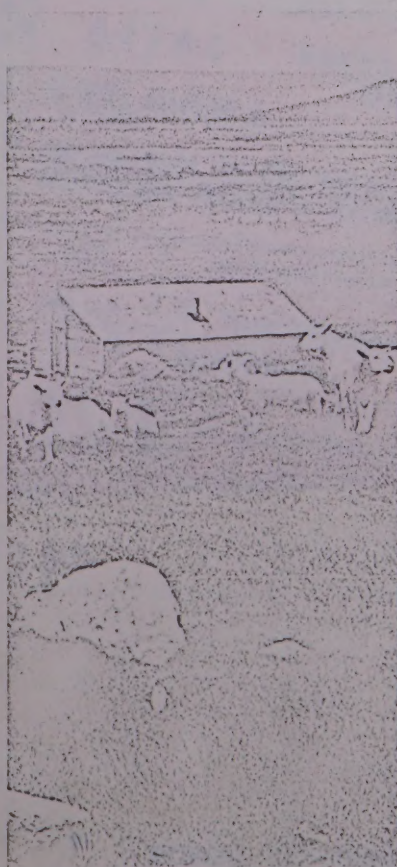


allenges Norway's Farmers

to reindeer movement and feeding. Lapps profit from reindeer by selling surplus meat and by making reindeer byproducts, such as hides and horns, into handicraft for sales to tourists.

Despite the limited possibilities and difficulties of agriculture in the Arctic, the Norwegian Government, in cooperation with local farmer organizations, is committed to a program of maintaining and improving farming in the north. The Norwegians want to keep farmers in the Arctic to maintain certain basic food supplies for defense purposes, and the Government is willing to pay the costs of programs to accomplish this objective.

One of the most important forms of Government aid to Arctic farmers at



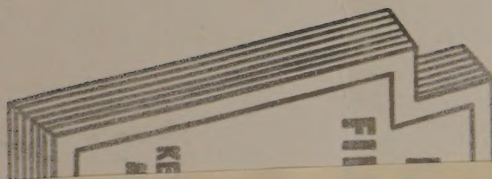
Clockwise from above left: loading hay in Alta Fjord in Finnmark; Finnmark farmhouse on the shore of the Arctic Ocean; sheep graze on an inland summer pasture.

Challenges Norway's Farmers

The Norwegian government has announced a series of measures to support its farmers in the face of increasing international competition. These measures include a reduction in import duties on agricultural products, a increase in export subsidies, and a strengthening of the national food safety standards. The government also plans to invest in research and development to help farmers improve their productivity and reduce their reliance on subsidies. These measures are expected to have a significant impact on the Norwegian agricultural sector, which has traditionally been a major part of the country's economy.

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